

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 (currently amended) A coating composition for making a microarray comprising:

microspheres dispersed in a fluid, the fluid containing a coating aid and a gelling agent or a precursor to a gelling agent, wherein the gelling agent forms a gel that is capable of immobilizing the microspheres ~~are immobilized~~ at random positions on ~~the~~ a substrate upon gelation of the gelling agent.

2 (currently amended) A coating composition according to claim 1 ~~useful for coating on a~~ wherein the substrate ~~that~~ is not premarked and does not contain microwells.

3 (original) A coating composition according to claim 1 wherein the random pattern on the substrate is preserved upon gelation of the gelling agent.

4 (previously presented) A coating composition according to claim 1 wherein the microspheres are chemically functionalized to have surface active sites.

5 (previously presented) A coating composition according to claim 4 wherein the surface active sites carry organic or inorganic attachments.

6 (currently amended) A coating composition according to claim 4 wherein ~~the organic or inorganic attachments on the surface active site is~~ has organic or inorganic attachments thereon that are capable of chemical or physical interaction.

7 (original) A coating composition according to claim 4 wherein the surface active site is bioactive.

8 (original) A coating composition according to claim 7 wherein the bioactive site interacts with nucleic acid, protein, or fragments thereof.

9 (original) A coating composition according to claim 1 wherein the microsphere contains a signature.

10 (original) A coating composition according to claim 9 wherein the signature is comprised of an oil-soluble dye.

11 (original) A coating composition according to claim 9 wherein the signature is interrogatable by optical, magnetic, or other electromagnetic means.

12 (original) A coating composition according to claim 1 wherein the gelling agent is gelatin.

13 (original) A coating composition according to claim 1 wherein the gelling agent undergoes thermal gelation.

14 (original) A coating composition according to claim 12 wherein the gelatin is alkali pretreated gelatin.

15 (original) A coating composition according to claim 1 wherein the microspheres have a mean diameter between 1 and 50 microns.

16 (original) A coating composition according to claim 1 wherein the microspheres have a mean diameter between 3 and 30 microns.

17 (original) A coating composition according to claim 1 wherein the microspheres have a mean diameter between 5 and 20 microns.

18 (currently amended) A coating composition according to claim 1 wherein the microspheres in the composition are capable of being immobilized

on the substrate in a concentration between 100 and 1 million microspheres per ~~cm~~² centimeter squared.

19 (currently amended) A coating composition according to claim 1 wherein the microspheres in the composition are capable of being immobilized on the substrate in a concentration between 1000 and 200,000 microspheres per ~~cm~~² centimeter squared.

20 (currently amended) A coating composition according to claim 1 wherein the microspheres in the composition are capable of being immobilized on the substrate in a concentration between 10,000 and 100,000 microspheres per ~~cm~~² centimeter squared.

21 (original) A coating composition according to claim 1 wherein the microspheres comprise a synthetic or natural polymeric material.

22 (original) A coating composition according to claim 21 wherein the polymeric material is an amorphous polymer.

23 (original) A coating composition according to claim 22 wherein the amorphous polymer is polystyrene.

24 (currently amended) A coating composition according to claim 4 wherein at least one surface active site of each of the microspheres ~~microsphere contains a surface active site comprising~~ comprises a functionality independently selected from the group consisting of carboxy, amine, epoxy, hydrazine, aldehyde and combinations thereof.

25 (canceled)

26 (original) A coating composition according to claim 1 wherein the microspheres are prepared by emulsion polymerization or limited coalescence.

27 (currently amended) A microarray comprising:
a substrate coated with a composition comprising microspheres dispersed in a fluid, the fluid containing a coating aid and a gelling agent or a precursor to a gelling agent, wherein the microspheres are immobilized at random positions on the substrate ~~upon~~ by gelation of the gelling agent.

28 (original) A microarray according to claim 27 wherein the substrate is free of receptors designed to physically or chemically interact with the microspheres.

29 (currently amended) A microarray according to claim 27 wherein the random ~~pattern~~ positions of the microspheres on the substrate is preserved upon gelation of the gelling agent.

30 (original) A microarray according to claim 27 wherein the gelling agent is gelatin.

31 (original) A microarray according to claim 27 wherein the microspheres bear chemically active sites.

32 (original) A microarray according to claim 27 wherein the chemically active site is bioactive.

33 (original) A microarray according to claim 27 wherein the substrate comprises glass, plastic, cellulose acetate, or polyethyleneterephthalate.

34 (previously presented) A microarray according to claim 27 wherein the substrate is flexible.

35-40 (canceled)

41-42 (not entered)

43 (new) A microarray according to claim 27 wherein the substrate is not premarked and does not contain microwells.

44 (new) A method of making a microarray, comprising the steps of:

providing a substrate;

coating on the substrate a composition containing microspheres and a gelling agent or precursor to a gelling agent;

wherein said composition is fluid during coating and the microspheres become randomly immobilized in the plane of the coating due to sol-to-gel transition of the gelling agent; and

wherein the substrate is characterized by an absence of specific sites designed to interact physically or chemically with the microspheres.

45 (new) A method according to claim 44 wherein said sol-gel transition occurs without the coating undergoing a drying process.

46 (new) A method according to claim 44 wherein the gelling agent is gelatin.

47 (new) A method according to claim 44 wherein the random immobilization of the microspheres on the substrate is preserved upon gelation of the gelling agent.

48 (new) A method according to claim 44 wherein the composition is coated on the substrate using a method such as knife coating, blade coating or slot coating.

49 (new) A method of making a microarray, comprising the steps of:

providing a substrate;

coating on the substrate a composition according to claim 1, wherein said composition is fluid during coating; and

allowing sol-to-gel transition of the gelling agent to randomly immobilize the microspheres in the plane of the coating.

50 (new) A coating composition comprising microspheres dispersed in a fluid, the fluid comprising a coating aid and a gelling agent or a precursor to a gelling agent, said fluid being capable of sol-to-gel transition to a gel, wherein the microspheres are capable of being immobilized at random positions in the gel when said sol-to-gel transition occurs.

51 (new) A microarray comprising a substrate coated with randomly immobilized microspheres in a gel, wherein the gel is formed by sol-to-gel transition of a fluid containing a coating aid and a gelling agent or a precursor to a gelling agent.